

IMPORTANT BIRD AND BIODIVERSITY AREAS IN INDIA

Priority sites for Conservation

Revised and updated 2nd Edition Vol. II



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Priority sites for conservation

**Second Edition: Revised and Updated
Volume II**

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TRIPURA



DHRTIMAN MUKHERJEE

Rudrasagar Lake in West Tripura district has great hydrological value as it serves as a significant source of ground water recharge. It has been recommended by BNHS as a Ramsar Site

Tripura ($22^{\circ} 57' - 24^{\circ} 33'$ N, $91^{\circ} 10' - 92^{\circ} 20'$ E) is surrounded by Bangladesh on three sides, except for east, where it is bounded by Assam and Mizoram. The State has a total area of 10,169 sq. km out of which 6,168 sq. km (53%) is occupied by forest (exclusive of tea gardens). Tripura occupies 0.32 per cent area of India and accounts for 12.78 per cent of the plant species found in the country. Tripura has been listed as one of the 26 endemic centres in India. Scientific studies have revealed that it possesses 1,545 plant species with 28 varieties, 379 tree species, 320 shrubs, 581 herbs, 165 climbers, 34 ferns, 45 epiphytes, four parasites and 16 climbing shrubs. The State also has 24 species of orchids and 266 species of medicinal plants. A scientific study has also shown that the Maximum Plant Diversity Index lies at 5.23, one of the highest in India. Rare species like *Angiopteris evecta*, a tree fern, and *Gnetum montanum*, a climbing gymnosperm, occupy a key position (Tripura Biodiversity Board 2014).

The state comprises low hills covered with moist deciduous forests dominated by *Shorea* and *Tectona* tree plantations with thick understorey, undulating hillocks covered with secondary forests dominated by *Dipterocarpus* trees and bushes, and agricultural plains dominated by paddy crop with rain-fed rivers and patches of plantation crops (jute, tea, rubber) and fruit trees (pineapples, mango, cashew nuts and

jackfruits) (Chakraborty 1989, 2003). Thus, the landscape of Tripura is very heterogeneous, providing edge effects and diverse habitat types for flora and fauna.

The major rivers draining the state are the Khowai, Dhalai, Manu and the Deo. Tripura was a princely state and was not directly under the rule of the British. It was annexed to the Indian Union in 1948.

In Tripura, handloom weaving is the single largest industry. It is essentially a tribal household industry. The sericulture industry is developing fast. Tripura is also abundant in natural gas and a number of gas-based industries have sprung up (Mathew 2003).

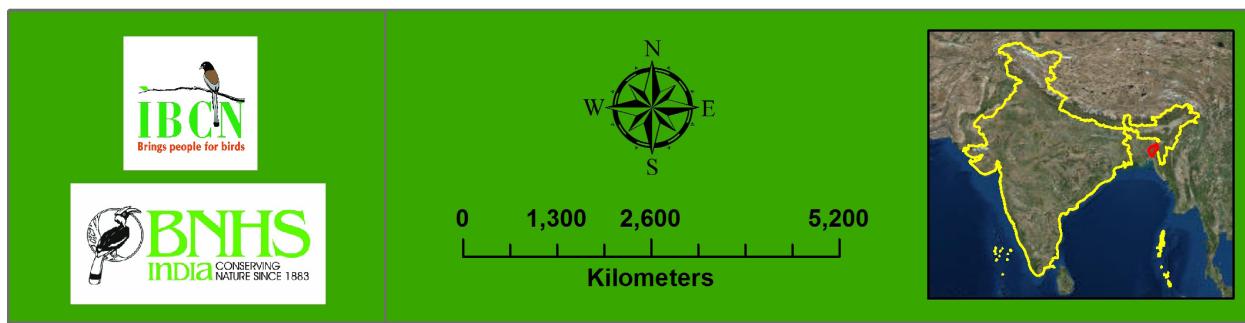
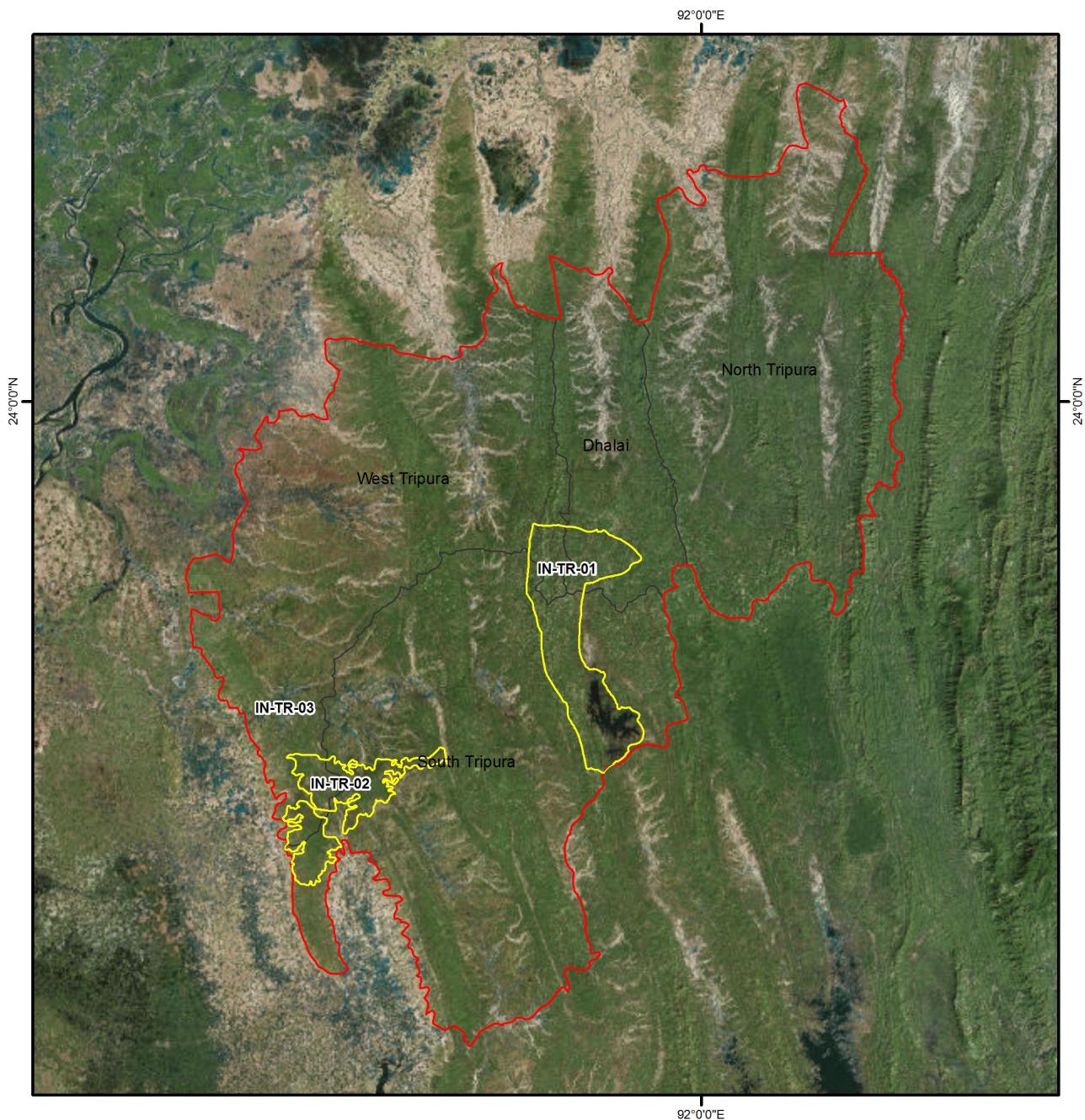
The climate is moist and humid. The temperature in summer ranges from 21°C to 38°C and in winter from 7°C to 33°C . The average annual rainfall is about 2,500 mm.

The total human population of Tripura is 3.67 million, which is 0.3% of the country's population (2011 Census). The average population density of Tripura is 350 persons per sq. km. As per the 2011 Census, the tribal population constitutes 31%. The total livestock population in the State is 4,272,733, which is 0.3% of the country's livestock population (Ministry of Agriculture 2012).

Vegetation

As per the Forest Survey of India report of 2013, the

Important Bird Areas in Tripura



main forest types found in the state are Tropical Moist Deciduous and Semi-evergreen. Tripura ranks eighth amongst states in terms of recorded forest area as percentage of the state's geographical area (Ministry of Environment and Forests 2013). The recorded forest area is 6,294 sq km, which constitutes 60.02% of the total geographical area. According to legal status, Reserved, Protected and Unclassed Forests constitute 57%, 8% and 35% of the forest area respectively.

According to the Forest Survey of India report of 1999, there are 855 villages in the State of which 644 have forest as a land use. The total forest area in such villages is 0.57 million ha. The villages having less than 100 ha, between 100–500 ha and more than 500 ha forest constitutes 13%, 40 % and 47% of the total villages respectively.

IBAs AND PROTECTED AREAS

The State has four wildlife sanctuaries, namely Gumti, Trishna, Sepahijala and Roa. The total area under the protected area network is 60,362 ha constituting 5.76% of the geographical area (Rodgers *et al.* 2000). In 2004, only two protected areas were identified as IBAs, Gumti and Trishna (Islam and Rahmani 2004). During the last ten years, we have added one more IBA in the state, Rudrasagar.

AVIFAUNA

Choudhury (2010) conducted three surveys in Tripura State in October 1997, April 2000 and January 2008. A total of 277 bird species was listed by him, including 20 species reported for the first time from the state. The Red List species were Baer's Pochard *Aythya baeri*, Slender-billed Vulture *Gyps tenuirostris* and Lesser Adjutant *Leptoptilos javanicus*. The Grey-headed Fish-eagle *Icthyophaga ichthyaetus* also breeds in this state (A. Choudhury, *pers. comm.* 2014).

Not much work on birds has been done in the state. However, looking at the forest cover, the bird life would be quite rich. All the IBAs fall in the Eastern Himalaya Endemic Bird Area (EBA 130) (Stattersfield, *et al.* 1998). Twenty-one birds are listed in this EBA as restricted range species. Many species are likely to occur in Gumti and Trishna Wildlife Sanctuaries. In the Trishna Wildlife Sanctuary, small wetlands created as water sources for wildlife now attract many species of waterfowl.

Endemic Bird Areas

Little is known about the bird diversity in Tripura but it lies in the Endemic Bird Areas of Eastern Himalaya (EBA 130), where Subtropical Hill Forest and Temperate Forest bird species could be found in winter.



Phayre's Langur or Leaf Monkey is the state animal of Tripura

IBAs of TRIPURA		
IBA site codes	IBA site names	IBA criteria
IN-TR-01	Gumti Wildlife Sanctuary	A1, A4i
IN-TR-02	Trishna Wildlife Sanctuary	Data Deficient
IN-TR-03	Rudrasagar Lake	A1

LIST OF THREATENED BIRDS WITH IBA SITE CODES		
CRITICALLY ENDANGERED		
Baer's Pochard	<i>Aythya baeri</i>	IN-TR-O1, 03
Slender-billed Vulture	<i>Gyps tenuirostris</i>	Not found in any IBA
VULNERABLE		
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-TR-01
NEAR THREATENED		
Oriental Darter	<i>Anhinga melanogaster</i>	IN-TR-01
Ferruginous Duck	<i>Aytha nyroca</i>	IN-TR-03
Black-headed Ibis	<i>Threskiornis melanocephalus</i>	IN-TR-01, 03
Grey-headed Fish Eagle	<i>Icthyophaga ichthyaetus</i>	IN-TR-01

The key threats to these areas and species are moderate habitat loss (e.g. due to logging, agriculture, overgrazing) and hunting (Stattersfield *et al.* 1998).

Biomes

The IBAs of Tripura fall in one biome: Biome 9 (Indo-Chinese Tropical Moist Forest) which has Lowland Evergreen Rainforest, Semi-evergreen Forest and Moist Deciduous Forest. As bird information is insufficient, we do not know how many biome species are found in Tripura.

THREATS AND CONSERVATION ISSUES

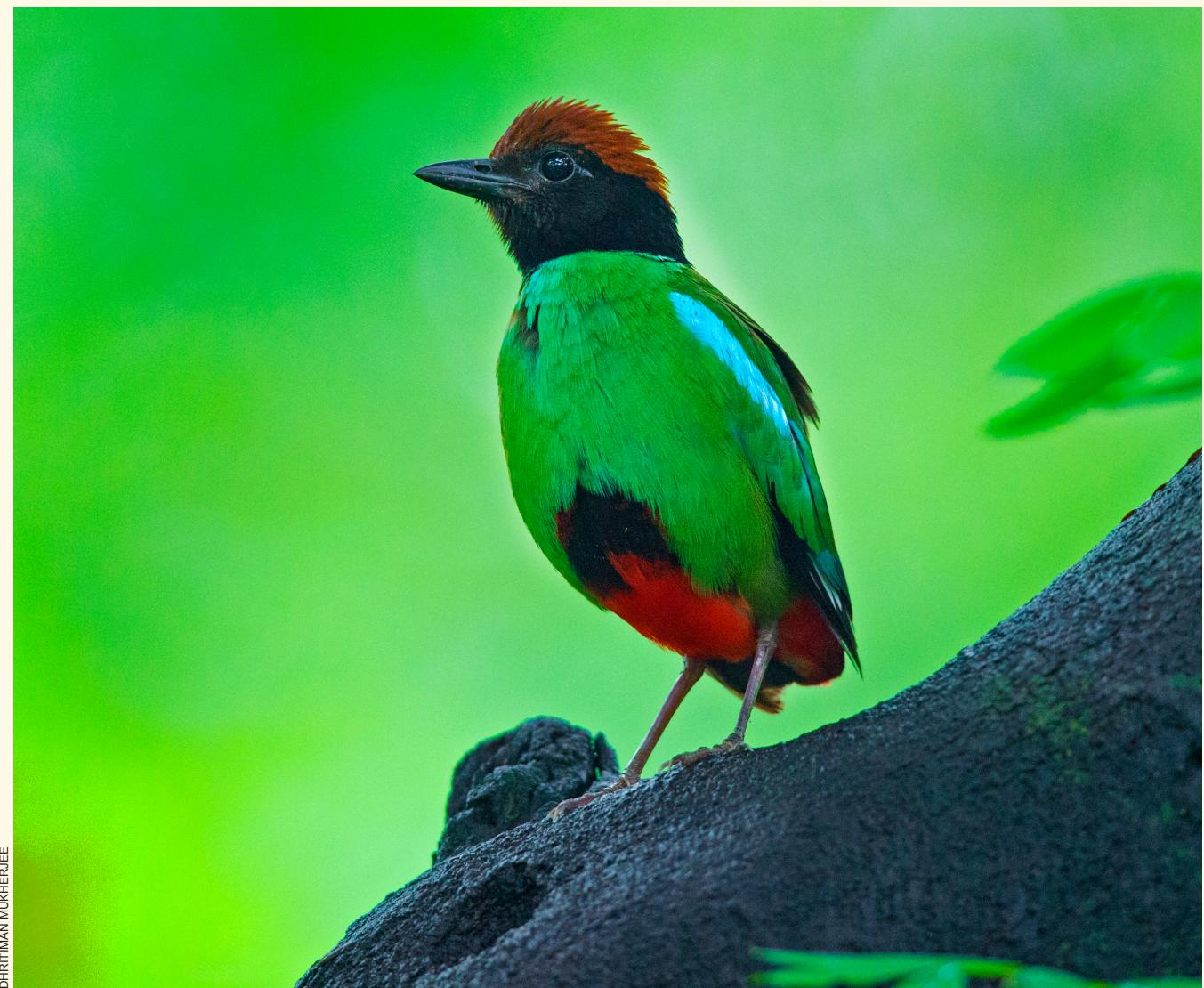
Like other states of the northeast, Tripura also suffers from the problems of shifting cultivation (*jhum*), deforestation and unsustainable hunting. Most of the large mammals and birds, especially Galliformes, have already disappeared or have become extremely rare. Two threatened birds, the White-winged Duck *Asarcornis scutulata* and the Green Peafowl *Pavo muticus* were reportedly present in the past, however, there is no recent report (A. U. Choudhury *pers. comm.* 2013). Among larger mammals, Asian Elephant *Elephas maximus*, Gaur *Bos gaurus* and Clouded Leopard *Neofelis nebulosa* (Choudhury 2003) are still found in small numbers. One of the IBAs, Gumti, has a unique problem. This Wetland Sanctuary was created when a dam and barrage were built for a hydroelectric project in 1974 across the Gumti river, near the confluence of the Raima and Sarma rivers. Large-scale displacement of people took place when their agricultural fields and villages were submerged. The villagers were settled on the nearby hills, leading to forest clearance and conflict with local inhabitants. After the discovery of huge gas reserves in Tripura, the importance of the Gumti hydroelectric dam

as a source of energy has decreased. Therefore, there is a proposal to de-commission the power plant, dismantle the dam and revert the submerged areas to the villagers. If this happens, Gumti wetlands IBA would also disappear. But, at the same time, the forest which was cleared for displaced people would also remain with them.

The Oil and Natural Gas Commission (ONGC) first found gas in Tripura in 1975. Later, in 2000 the ONGC found a huge gas reservoir in the Trishna Wildlife Sanctuary but could not proceed due to lack of environmental clearance. Environmental clearance has not been given as the area falls in the Sanctuary. ONGC has requested the Government to be allowed to drill several wells all over the Sanctuary to unearth the natural gas. In the Sanctuary, a 500 MW thermal power plant is planned by the Northeast Electric Power Corporation (NEEPCO). The foundation stone for the 25 million dollar power plant that is to come up at Morakchak was laid in March 2002. NEEPCO had approached the Oil and Natural Gas Commission (ONGC) for a commitment to provide uninterrupted natural gas for 15 years. A Supreme Court order preventing drilling or construction within or near a protected area, however, disallowed ONGC from committing to such an undertaking. It is reported that NEEPCO has approached foreign agencies for funding. In case this plan is allowed due to its strategic importance to the nation, a proper environmental impact analysis should be done by an independent agency and its recommendations strictly followed to minimize danger to the Sanctuary.

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DHIRITMAN MUKHERJEE

In India Hooded Pitta *Pitta sordida* is found in Arunachal Pradesh, Meghalaya, Nagaland and Tripura.
A sub species is resident in Great and Little Nicobars

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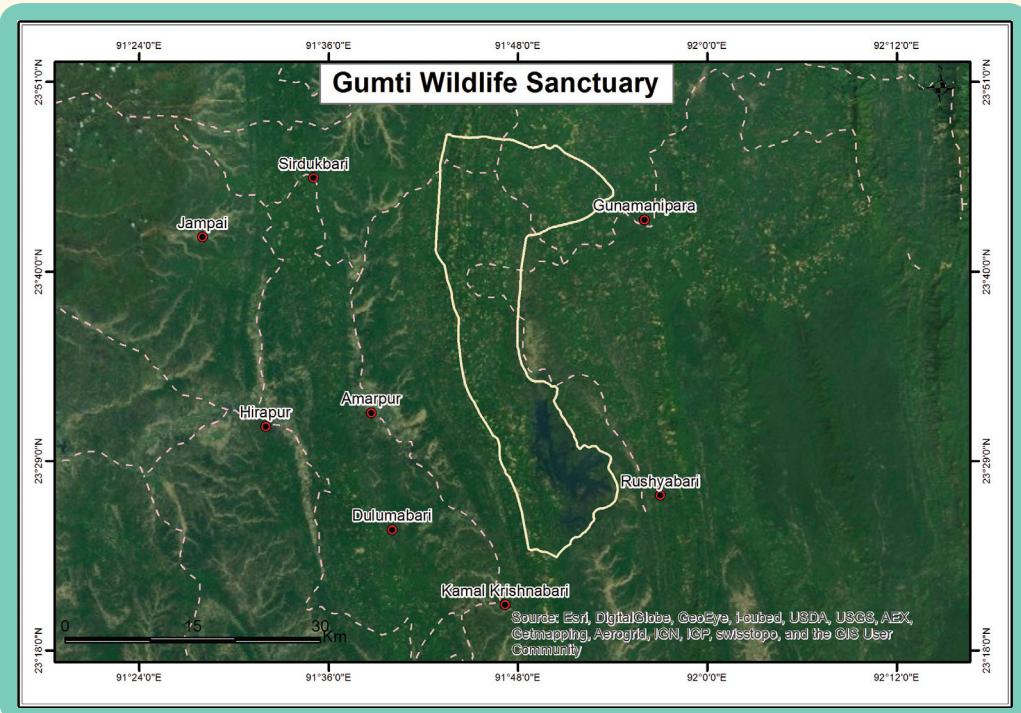
GUMTI WILDLIFE SANCTUARY

IBA Site Code	: IN-TR-01
State	: Tripura
District	: Dhalai, Gomati
Coordinates	: 23° 38' 46" N, 91° 46' 53" E
Ownership	: State
Area	: 38,954 ha

Altitude	: 50–400 msl
Rainfall	: >1,600 mm
Temperature	: 7 °C to 35 °C
Biogeographic Zone	: Northeast
Habitats	: Reservoir, Tropical Semi-evergreen Forest

IBA CRITERIA: A1 (Threatened), A4i ($\geq 1\%$ of biogeographic population of waterbirds).

PROTECTION STATUS: Wildlife Sanctuary, established 1988.



GENERAL DESCRIPTION

Tripura is a small state in northeast India, mostly hilly. Gumti is the largest wildlife sanctuary in the state, covering 38,954 ha which include part of c. 4,200 ha of wetland. The state has three categories of lakes: oxbow lakes, tectonic lakes, and artificial reservoirs. The oxbow lakes, locally called *beel*, are mostly small and scattered in the plains. The largest artificial lake in the state is the Dumbur lake or Gumti Reservoir, which was formed due to the construction of a hydroelectric dam in 1974 across the Gumti river, near the confluence of the Raima and Sarma rivers. There are at least 48 islands in the Reservoir (Choudhury 2002), many of them are rich in wildlife, including primates (Ranjitsinh 1989) and birds (A. U. Choudhury, *pers. comm.* 2003).

Islam & Rahmani (2008) have suggested Gumti Wildlife Sanctuary as a Ramsar Site as it qualifies Ramsar Criteria

2 (wetland supports threatened ecological communities) and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). According to Ramsar Wetland Type, Gumti is Type 6 (water storage reservoir).

AVIFAUNA

Not much information is available on the birdlife of Gumti Reservoir. Since its establishment, it has been attracting waterfowl but the total number and species composition are not known. Owing to deforestation in the catchment, about half of the reservoir has silted up, creating shallow zones, which are very attractive to waders and ducks.

The site has more than 51 avian species (Choudhury 2002). According to Choudhury (*pers. comm.* 2003), this site would qualify for A1 and A4 criteria. Lesser Adjutant

Leptoptilos javanicus, a Vulnerable species, and Oriental Darter *Anhinga melanogaster*, a Near Threatened species, are likely to be present in good numbers.

Choudhury (2009, 2010) conducted a survey on January 16, 2008, and reported 13 Baer's Pochard *Aythya baeri*. Other species seen were Great Crested Grebe *Podiceps cristatus* (three individuals), Tufted Duck *Aythya fuligula* (340), Northern Pintail *Anas acuta* (six), Common Pochard *Aythya ferina* (two), and other birds.

CRITICALLY ENDANGERED

Baer's Pochard *Aythya baeri*

VULNERABLE

Lesser Adjutant *Leptoptilos javanicus*

NEAR THREATENED

Oriental Darter *Anhinga melanogaster*

OTHER KEY FAUNA

The forested part of this sanctuary, which also serves as the catchment area for the Reservoir and the Gumti river, is rich in non-human primates. The species are: Phayre's Langur or Leaf Monkey *Trachypithecus phayrei*, Capped Langur *T. pileatus*, Hoolock Gibbon *Hylobates hoolock*, Pig-tailed Macaque *Macaca nemestrina*, Rhesus Macaque *M. mulatta*, Slow Loris *Nycticebus coucang* (Gupta 2001, Ranjitsinh 1989, A.U. Choudhury, pers. comm. 2003). Leopard *Panthera pardus* is the largest predator. Barking Deer *Muntiacus muntjak* is known to occur. The Asiatic Elephant *Elephas maximus* is an occasional visitor. According to Choudhury (2009), Clouded Leopard *Neofelis nebulosa*, Dhole or Wild Dog *Cuon alpinus*, Gaur *Bos gaurus* (extirpated), and Himalayan Serow *Capricornis thar* are also found here. Choudhury (2009) has reported three species of bears: Sloth Bear *Melursus ursinus*, Asiatic Black Bear *Ursus thibetanus*, and Sun Bear *Helarctos malayanus*.

LAND USE

- Forestry
- Fishing
- Agriculture
- Power production
- Rubber Plantation

THREATS AND CONSERVATION ISSUES

- Deforestation of catchment area
- Poaching
- Siltation of the wetland
- Rubber Plantation

During and after the construction of the hydroelectric dam and creation of a large reservoir, large-scale displacement of local people occurred when their agricultural fields and villages were submerged. The villagers were resettled



DHIRITMANI MUKHERJEE

Gumti is the largest wildlife sanctuary in the state, covering 38,954 ha which include c. 4,200 ha of wetland. The wetland is surrounded by Tropical Semi-evergreen forest. Not much information on avifauna is available

on the nearby hills, leading to forest clearance and conflict with the local inhabitants. After the discovery of huge reserves of natural gas in Tripura, the importance of Gumti hydroelectric dam as a source of energy has decreased. Another issue is the silting of almost 20,000 ha, mainly due to deforestation in the catchment areas. Due to these various factors, there is a proposal by National Hydro Power Corporation (NHPC) and North Eastern Electric Power Corporation (NEEPCO) (Bhaumik 2003) to de-commission the power plant, dismantle the dam, and revert the submerged areas to the villagers. As a consequence this wetland IBA may also be lost.

KEY CONTRIBUTOR

Anwaruddin Choudhury

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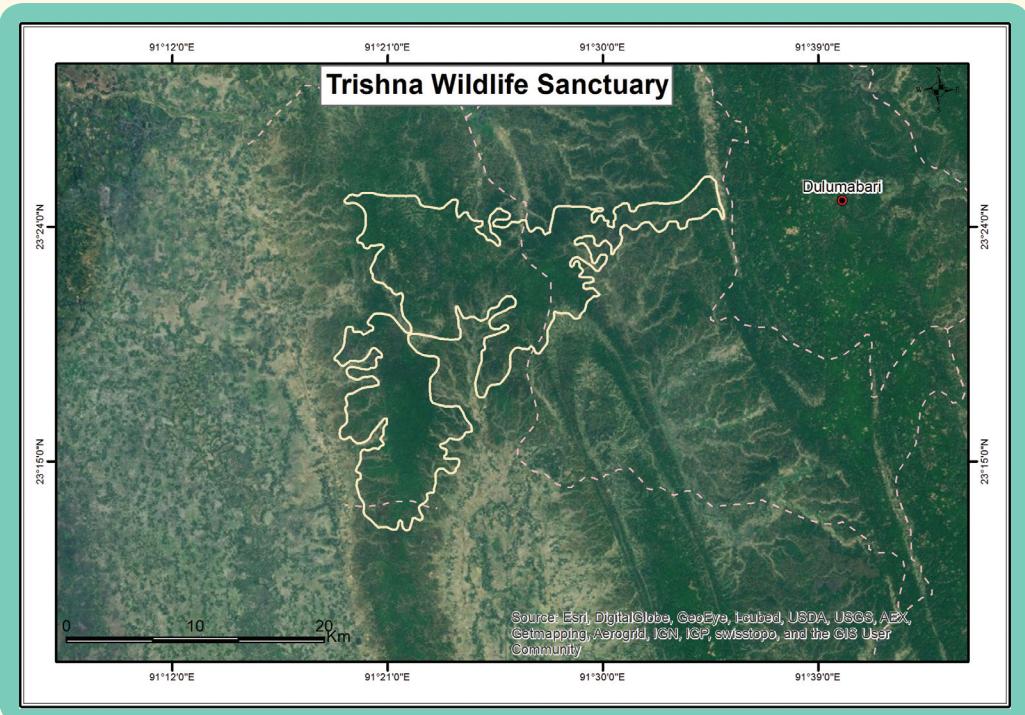
TRISHNA WILDLIFE SANCTUARY

IBA Site Code	: IN-TR-02
State	: Tripura
District	: South Tripura and Sepahijala
Coordinates	: 23° 19' 33" N, 91° 23' 21" E
Ownership	: State
Area	: 19,470 ha

Altitude	: 10–200 msl
Rainfall	: 2,400 mm
Temperature	: 5 °C to 40 °C
Biogeographic Zone	: Northeast
Habitats	: Tropical Semi-evergreen Forest, Wetland

IBA CRITERIA: A2 (Endemic Bird Areas 130: Eastern Himalaya), A3 (Biome 9: Indo-Chinese Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, established February, 1988.



GENERAL DESCRIPTION

The Trishna Wildlife Sanctuary is managed by the southern Forestry Circle of Tripura and South and West Tripura districts. About half of its boundary is common with Bangladesh. The sanctuary comprises 27 *Mouja* of Belonia, Udaipur, and Sonamura in South Tripura district.

Apart from forest, the sanctuary has a number of perennial rivulets, waterbodies, and grasslands. The sanctuary is famous for Gaur *Bos gaurus*, locally called *Gaba*, and is home to several species of primates.

Trishna Wildlife Sanctuary was created for the protection of its relatively large population of Gaur that was surviving here, having been hunted out from the surrounding areas. After the establishment of the sanctuary, poaching has decreased and wildlife is slowly being restored.

Four main forest types are present in the sanctuary: Tropical Semi-evergreen, East Himalayan Lower Bhabar

Sal, Moist Mixed Deciduous Forest, and Savannah woodland.

AVIFAUNA

Practically little is known about the birdlife of this Data Deficient site. However, judging from the forest cover, the birdlife would be quite rich. The sanctuary is included in the Eastern Himalaya Endemic Bird Area (EBA 130) (Stattersfield *et al.* 1998). BirdLife International (undated) has identified 21 restricted-range or endemic birds in this EBA. Many species are likely to occur in Trishna. There are small wetlands that were created as water sources for wildlife and now they attract many species of waterfowl. The Near Threatened Grey-headed Fish Eagle *Icthyophaga ichthyaetus* breeds in Trishna while it has populations of Black-headed Ibis *Threskiornis melanocephalus* and Oriental Darter *Anhinga melanogaster*, both Near Threatened.



DHRTIMAN MUKHERJEE

Trishna Wildlife Sanctuary was created for the protection of its relatively large population of Gaur that was surviving here, having been hunted out from the surrounding areas. There are small wetlands that were created as water sources for wildlife and now they attract many species of waterfowl

Choudhury (2010) conducted three surveys in Tripura State in October 1997, April 2000, and January 2008, and listed a total of 277 bird species, including 20 species reported for the first time.

OTHER KEY FAUNA

Phayre's Leaf Monkey *Trachypithecus phayrei* is the State Animal of Tripura. It is confined to the three states of the Northeast. Hoolock Gibbon *Hoolock hoolock*, Capped Langur *Trachypithecus pileatus*, Pig-tailed Macaque *Macaca leonina*, Binturong *Arctictis binturong*, a highly endangered and rarely encountered carnivore species of family Viverridae are found in this IBA. The tiger has been extirpated from this IBA. Majumder *et al* (2013) found 59 species of butterflies belonging to 48 genera and 5 families in Trishna WLS.

LAND USE

- Forestry
- Nature conservation and education

THREATS AND CONSERVATION ISSUES

- Poaching
- Illegal timber cutting

- Construction of thermal power plant
- Encroachment
- Rubber plantation

A 500 MW thermal power plant is being set up at Morakchak near Trishna WLS by the North East Electric Power Corporation (NEEPCO). The foundation stone for this Rs. 2,500 crore power plant was laid in March 2002. NEEPCO had approached the Oil and Natural Gas Commission (ONGC) for a commitment to provide a steady supply of natural gas for 15 years. A Supreme Court order preventing drilling or construction within or near a protected area, however, disallowed ONGC from committing to such an undertaking. It is reported that NEEPCO has approached

foreign agencies for funding. In case this plan is allowed due to its strategic importance to the nation, environmental impact analysis should be done by an independent agency and its recommendations strictly followed to minimize danger to the sanctuary. Rubber plantation all over the fringe is a fairly recent threat. Many of the small valleys are under cultivation.

KEY CONTRIBUTOR

Anwaruddin Choudhury.

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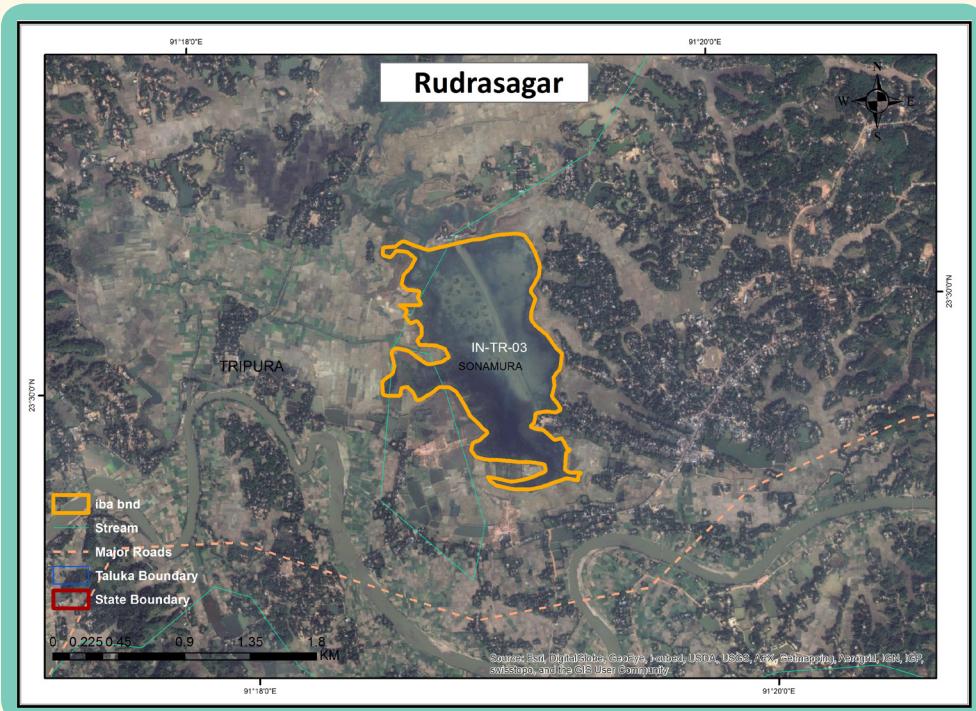
RUDRASAGAR LAKE

IBA Site Code	: IN-TR-03
Administrative Region (State)	: Tripura
District	: Sepahijala
Coordinates	: 23° 29' N, 90° 01' E
Ownership	: State Government
Area	: 240 ha

Altitude	: 16 msl
Rainfall	: 2,500 mm
Temperature	: 5 °C to 37 °C
Biogeographic Zone	: Northeast
Habitats	: Permanent Freshwater Lake

IBA CRITERIA: (A1 Threatened species)

PROTECTION STATUS: Not officially protected



GENERAL DESCRIPTION

Rudrasagar Lake lies in Melaghar Block under Sonamura Subdivision in Sepahijala district, and is c. 50 km from the state capital, Agartala. Hydromorphologically, Rudrasagar Lake is a natural sedimentation reservoir, which receives water from three perennial streams, namely Oacherra, Durlavnarayacherra, and Kemtalicherra. After the sediment from the received flow settles, clear water is discharged into the River Gumti through a channel named Kachigang.

Annual rainfall is c. 2,500 mm, spread from June to September, with four or five peaks. The lake water is clean, with insignificant pollution. Its depth varies from 2 m to 9 m.

Rudrasagar Lake has great hydrological value as it serves as a significant source of ground water recharge. However, during monsoon, the downstream area gets flooded, particularly the part entering Gumti river. Inundation

causes losses in agriculture and fisheries, and disrupts communication, affecting the economically depressed inhabitants.

Rudrasagar Lake is a Ramsar Site as it fulfills Ramsar Criteria 2 (wetland supports globally Threatened ecological communities), Criteria 3 (wetland supports populations of animal/plant species important for maintaining biological diversity), and Criteria 8 (wetland supports important source of food for fishes). The site is classified as Ramsar Wetland Type O (permanent freshwater lake) and Type 6 (water storage area).

AVIFAUNA

Not much work has been done on birds in this lake, except for visits by Anwaruddin Choudhury. Baer's Pochard *Aythya baeri*, a Critically Endangered species and Near Threatened Ferruginous Duck *A. nyroca* are recorded



Rudrasagar Lake in West Tripura district has been recommended as a potential Ramsar Site due to its unique hydromorphological features. Critically Endangered Baer's Pochard *Aythya baeri* is regularly seen here

CRITICALLY ENDANGERED

Baer's Pochard	<i>Aythya baeri</i>
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NEAR THREATENED

Ferruginous Duck	<i>Aythya nyroca</i>
Oriental Darter	<i>Anhinga melanogaster</i>

from this site. Other bird species such as Little Cormorant *Phalacrocorax niger*, Asian Openbill *Anastomus oscitans*, Lesser Whistling Teal *Dendrocygna javanica*, Gadwall *Anas strepera*, Northern Shoveller *A. clypeata*, Cotton Pygmy Goose *Nettapus coromandelianus*, and Osprey *Pandion haliaetus* have been recorded (Choudhury 2008).

OTHER KEY FAUNA

The fish fauna consists of *Mystus cavasius*, *Ompok bimaculatus*, *Wallago attu*, *Heteropneustes fossilis*, *Puntius sophore*, *Esomus danica*, *Chanda ranga*, *Nandus nandus*, *Anabas testudineus*, *Colisa fasciatus*, *Notopterus notopterus*, *N. chitala*, *Cirrhinus reba*, *Labeo bata* and others. The important crustaceans are *Macrobrachium rosenbergii*, *Palaemon serratus* and *Macrobrachium rude* (Islam & Rahmani 2008). The lake has a perennial connection with Gumti, one of the major rivers of the state, facilitating safe breeding ground for the majority of the indigenous fishes of the state. It also supports the endangered Three-striped Roofed Turtle *Batagur dhongoka*.

LAND USE

- Water supply
- Irrigation
- Fishing
- Tourism

At present, the annual fish production is c. 26.44 metric tons (1999–2000 data). This can be increased with appropriate conservation measures. Although the permanent water area is leased out to the Rudrasagar Udhastu Fishermen Samabaya Samity Limited, the areas surrounding the lake are privately owned, and mainly under

paddy cultivation. The catchment area is mainly used for horticulture, agroforestry, and human habitation.

There is a heritage palace named Nirmahal in the IBA.

THREATS AND CONSERVATION ISSUES

- Siltation and reclamation
- Increased use of pesticide in agricultural fields

Rudrasagar Lake is an unprotected area, not in the purview of the Forest Department. The Departments of Agriculture, Soil Conservation, Horticulture, and Fisheries are responsible for maintaining and exploiting the wetland.

A project for the conservation of the wetland has been prepared and submitted to the Ministry of Environment and Forests, Government of India along with a Management Action Plan (MAP). The State Forest Department has been made the nodal agency to undertake projects on Rudrasagar and all the other wetlands of Tripura. The State Government is considering establishing a Wetland Authority of Tripura. Under the chairmanship of the Additional Principal Chief Conservator of Forests, a state-level Technical Advisory Committee has been constituted to implement the MAP (A.K. Gupta, *pers. comm.* 2007). This lake is used for recreation and tourism. Every year, Nirmahal Festival is celebrated with participation from various states of India. The local people organize a swimming competition, boat race, and fair. Many people engage in sport fishing. Approximately 50,000 tourists visit Rudrasagar every year.

KEY CONTRIBUTOR

Anwaruddin Choudhury.

KEY REFERENCES

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